

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1. (Previously Presented) A preamplifier for processing read head signals to correct for thermal asperity transients, comprising:

an input gain stage receiving a read head signal from the read head;

a correction circuit connected to the input gain stage comprising a filter controller detecting a thermal asperity transient in the read head signal and generating a control signal based on the detecting and further comprising a filter operating dynamically based on the control signal to at least partially filter the detected thermal asperity transient from the read head signal to produce a filtered read head signal; and

a reader output buffer receiving and transmitting the filtered read head signal, wherein the filter comprises a voltage controlled high pass filter and wherein the control signal comprises a voltage signal;

wherein the filter controller receives as an input signal an output voltage of the voltage controlled high pass filter or an input voltage of the voltage controlled high pass filter;

wherein the filter controller comprises a detector for identifying peaks in the input signal and a non-linear function generator, an output of the detector being applied to the non-linear function generator to generate the control signal for the filter; and

wherein the non-linear function generator is adapted to produce an increasing function of an absolute value of the output of the detector, the non-linear function

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generator comprising  $(|V_{IN}|/V_C)^4$  or  $e^{|V_{IN}|/V_C}$  where  $V_{IN}$  is the output of the detector and  $V_C$  is a control coefficient.

2. (Original) The preamplifier of claim 1, wherein the filter is connected in series with the input gain stage and the reader output buffer.

3. – 5. (Cancelled)

6. (Previously Presented) The preamplifier of claim 1, wherein the detector comprises a low pass filter.

7. – 9. (Cancelled)

10. (Previously Presented) A method for dynamic correction of thermal asperity transients in magneto resistive (MR) read head output signals, comprising:

receiving an output signal from an MR read head;

processing the MR read head output signal through a gain stage to generate a filter input signal;

detecting a peak in the filter input signal, the peak indicating a thermal asperity transient in the MR read head output signal, wherein the detecting comprises applying the filter input signal to a low pass filter;

generating a control signal based on the peak detecting, wherein the control signal generating comprises applying an output of the low pass filter to a non-linear function generator to generate an increasing function of an absolute value of the output of the low pass filter, the non-linear function generator comprising  $(|V_{IN}|/V_C)^4$  or  $e^{|V_{IN}|/V_C}$  where  $V_{IN}$  is the output of the detector and  $V_C$  is a control coefficient; and

filtering the filter input signal based on the control signal to produce a filtered MR read head signal.

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11. (Original) The method of claim 10, wherein the filtering comprises applying a voltage controlled high pass filter to the filter input signal, the high pass filter operating dynamically based on the control signal.

12. – 14. (Cancelled)

15. (Original) The method of claim 10, wherein the filtering comprises removing low frequency components of the detected thermal asperity transient in the MR read head output signal.

16. (Previously Presented) A disk drive assembly with thermal asperity transient correction, comprising:

a read head generating a read head signal based on reading data from a disk, the read head signal comprising a thermal asperity transient;

a preamplifier connected to the read head processing the read head signal to generate a filtered read head signal, wherein the preamplifier comprising a reader input gain stage, a reader output buffer, and a correction circuit positioned between the reader input gain stage and the reader output buffer, the correction circuit adapted for detecting and at least partially filtering the thermal asperity transient from the read head signal; and

a read channel for processing the filtered read head signal to identify the read data;

wherein the correction circuit comprises a filter controller for detecting the thermal asperity transient and in response, generating a control signal and further comprises a voltage controlled high pass filter adapted to operate dynamically to perform the filtering of the thermal asperity transient based on the control signal;

wherein input to the filter controller is an output voltage of the voltage controlled high pass filter or is an input voltage of the voltage controlled high pass filter;

wherein the filter controller comprises a low pass filter adapted for detecting peaks in the filter controller input;

wherein the filter controller further comprises a non-linear function generator for producing the control signal based on an increasing function of an absolute value of the output of the low pass filter; and

wherein the non-linear function generator comprises  $(|V_{IN}|/V_C)^4$  or  $e^{|V_{IN}|/V_C}$  wherein  $V_{IN}$  is the output of the detector and  $V_C$  is a control coefficient.

17. – 23. (Cancelled)

24. (Currently Amended) A preamplifier for processing read head signals to correct for thermal asperity transients, comprising:

an input gain stage receiving a read head signal from the read head;  
a correction circuit connected to the input gain stage comprising a filter controller detecting a thermal asperity transient in the read head signal and generating a control signal based on the detecting and further comprising a filter operating dynamically based on the control signal to filter the read head signal on an ongoing basis to produce a filtered read head signal, wherein the filter is a voltage-controlled high pass filter, and wherein the amount of filtering comprises setting a default low corner frequency as a function of the read head signal, and wherein the voltage-controlled high pass filter is controlled by the control signal to vary the amount of the filtering over time to return a corner frequency of the filter to the default low corner frequency when a thermal asperity transient is not detected by the correction circuit, and wherein an amount of filtering performed by the filter varies with the control signal; and

a reader output buffer receiving and transmitting the filtered read head signal.

25. (Cancelled)

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26. (Previously Presented) The preamplifier of claim 24, wherein the filter controller receives as an input signal an output voltage of the voltage controlled high pass filter or an input voltage of the filter, wherein the filter controller comprises a detector for identifying peaks in the input signal and a non-linear function generator comprising an increasing function of an absolute value of the input signal from the detector, an output of the detector being applied to the non-linear function generator to generate the control signal for the filter.

27. (Previously Presented) The preamplifier of claim 26, wherein the non-linear function generator comprises  $(|V_{IN}|/V_C)^4$  or  $e^{|V_{IN}|/V_C}$  where  $V_{IN}$  is the output of the detector and  $V_C$  is a control coefficient.